

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
28 July 2005 (28.07.2005)

PCT

(10) International Publication Number
WO 2005/069529 A1

(51) International Patent Classification⁷: **H04L 1/18**,
H04B 7/005

(21) International Application Number:
PCT/IB2003/006124

(22) International Filing Date:
22 December 2003 (22.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **NOKIA CORPORATION** [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **ZHUYAN, Zhao** [CN/CN]; Jiu Jie Fang, 908-2-3, Hai Dian District, Beijing, 100038 (CN).

(74) Agent: **KURIG, Thomas**; Becker, Kurig, Straus, Bavariastrasse 7, 80336 München (DE).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

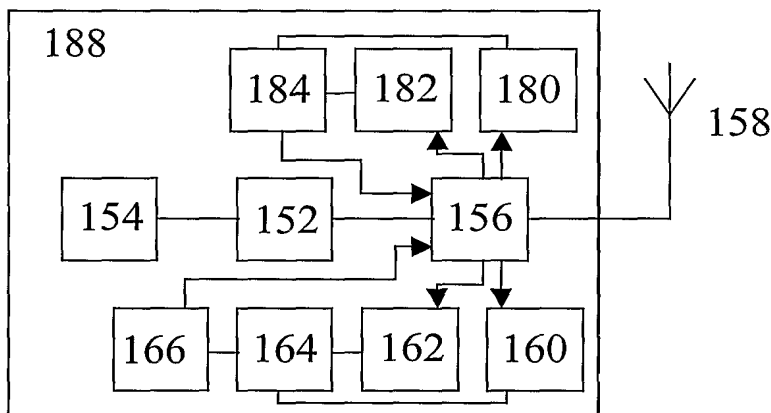
(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- with amended claims

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A METHOD AND A DEVICE FOR DECREASING A TRANSMISSION DELAY IN A MULTI-CHANNEL DATA TRANSMISSION



(57) Abstract: The present invention relates to a method and a device to improve the transmission characteristics of physical layer (PHY) hybrid automated repeat request (HARD) in multi subchannel frequency division duplex (FDD) links. The present invention provides a method for decreasing a transmission delay in a multi-sub-channel data transmission of physical layer frames using hybrid automated repeat request with acknowledgement signaling, wherein said method comprises: determining, if no physical layer frame needs to be transmitted in a provided sub channel, determining, if there is a physical layer frame of another sub-channel with pending acknowledgement, selecting said physical layer frame with pending acknowledgement, if no physical layer frame needs to be transmitted in the provided sub-channel, and transmitting said selected frame in said provided sub-channel. The method can also or additionally comprise determining a threshold number, based on the number of sub-channels in said multi-sub-channel data transmission, determining the number of physical layer frames to be transmitted in all subchannels, and controlling the transmission power of the transmission of the physical layer frames, on the basis of the relationship between said threshold number and said determined number of physical layer frame.

WO 2005/069529 A1